

SCOPE OF CLAIMS

1. An X-ray generating device comprising:

5 a high voltage transformer for boosting an AC power voltage including a plurality of primary windings connected in parallel to an AC power supply, at least one iron core, and a plurality of secondary windings respectively corresponding to the primary windings;

10 a plurality of high voltage rectifier circuits which are connected to outputs of the plurality of secondary windings of the high voltage transformer and converts the outputs into DC outputs, connects the DC in series, and grounds the midpoints of the series connection at a neutral point; and

15 an X-ray tube receiving a predetermined tube voltage through a cathode and an anode thereof, respectively connected to a DC output negative terminal and a DC output positive terminal on both ends of the plurality of high voltage rectifier circuits, wherein

20 a ratio obtained by dividing a plurality of values of currents respectively flowing through the plurality of primary windings each other at an identical time point is always kept at a predetermined ratio while the tube voltage is applied.

2. An X-ray generating device according to claim 1, wherein the predetermined ratio is 1 and the predetermined ratio is kept by waveform phase difference removing means which removes difference in waveform and phase occurring between the plural currents respectively flowing through the plural primary windings.

3. An X-ray generating device according to claim 2, wherein the waveform phase difference removing means has a hollowed core made of a ferromagnetic material of large permeability, and a part of plural conductors connecting the primary windings and the AC power supply

passes through or turns around the hollow, and differences in waveforms and phases are removed by mutually canceling magnetic fields generated due to the primary winding currents.

4. An X-ray generating device according to claim 3, wherein the
5 core has a high AL value, and gives an inductance equivalent to or larger than a leakage inductance of the high voltage transformer.

5. An X-ray generating device according to claim 1, wherein the AC power supply includes a DC power supply and an inverter for converting a current from the DC power supply into a high-frequency
10 AC current.

6. An X-ray generating device according to claim 1, wherein the X-ray tube is a metal X-ray tube having a metallic part in a substantial center and the metallic part is connected to the grounded neutral point.

7. An X-ray generating device according to claim 6, wherein the
15 predetermined ratio is smaller than 1.

8. An X-ray generating device according to claim 7 further comprising: current addition means formed by commonly winding two or more conductors among the plurality of conductors respectively connecting the plural primary windings and the AC power supply around
20 a ferromagnetic core having a large permeability to keep the ratio between the plural current values are kept at a predetermined ratio.

9. An X-ray generating device according to claim 8, wherein the core has a high AL value and gives an inductance equivalent to or larger than a leakage inductance of the high voltage transformer.

25 10. An X-ray generating device according to claim 6, further comprising:

waveform phase difference removing means which lowers the predetermined ratio to be smaller than 1 and removes differences in waveform and phase generated between the plural currents

respectively flowing through the plurality of primary windings; and

current addition means formed by commonly winding two or more conductors among the plural conductors respectively connecting the plurality of primary windings and the AC power supply around the
5 ferromagnetic core having a large permeability, wherein

the ratio between the plural current values is kept at a predetermined ratio by the waveform phase difference removing means and the current addition means.

11. An X-ray generating device according to claim 10, wherein the
10 waveform phase difference removing means has a hollowed core made of ferromagnetic material of a large permeability, a part of the plural conductors passes through or turns around the hollow, and the differences in waveforms and phases are removed by mutually canceling magnetic fields generated by the primary current.

12. An X-ray generating device according to claim 11, wherein the
15 two cores have a high AL value and give an inductance equivalent to or larger than a leakage inductance of the high voltage transformer.

13. An X-ray CT apparatus comprising:
an X-ray generating device according to claim 1;
20 an X-ray detector arranged opposite to the X-ray tube;
a rotative circular plate holding the X-ray tube and the X-ray detector, and being driven to rotate around an object to be examined;
and

image reconstructing means for reconstructing a tomogram of
25 the object as an image on the basis of the strength of X-rays detected by the X-ray detector.

14. An X-ray CT apparatus comprising:
an X-ray generating device according to claim 5;
an X-ray detector arranged opposite to the X-ray tube;

a rotative circular plate for holding the X-ray tube and the X-ray detector, and being driven to rotate around an object to be examined; and

5 image reconstructing means for reconstructing a tomogram of the object as an image on the basis of the strength of X-rays detected by the X-ray detector.

15. An X-ray CT apparatus comprising:

an X-ray generating device according to claim 7;

an X-ray detector arranged opposite to the X-ray tube;

10 a rotative circular plate for holding the X-ray tube and the X-ray detector, and being driven to rotate around an object to be examined; and

image reconstructing means for reconstructing a tomogram of the object as an image on the basis of the strength of X-rays detected
15 by the X-ray detector.

16. An X-ray CT apparatus comprising:

an X-ray generating device according to claim 10;

an X-ray detector arranged opposite to the X-ray tube;

20 a rotative circular plate for holding the X-ray tube and the X-ray detector, and being driven to rotate around an object to be examined; and

image reconstructing means for reconstructing a tomogram of the object as an image on the basis of the strength of X-rays detected
25 by the X-ray detector.